



June 14, 2019

*Ex Parte*

Marlene H. Dortch, Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street SW  
Washington, DC 20554

Re: Unlicensed Use of the 6 GHz Band, ET Docket No. 18-295; Expanding Flexible Use  
in Mid-Band Spectrum Between 3.7 and 24 GHz, GN Docket No. 17-183

Dear Ms. Dortch:

On June 11, 2019, Mark Racek, Senior Director, Spectrum Policy, and Jared Carlson, Vice President, Government Affairs and Public Policy, Ericsson, met with Will Adams, Legal Advisor to Commissioner Brendan Carr. Ericsson's representatives at the meeting presented the attached presentation, "Balanced Approach to 6 GHz." Ericsson noted that, presently, there is no large swath of mid-band spectrum available for licensed, macro 5G service in the U.S.

To lead in 5G, the U.S. needs to identify more mid-band spectrum – and soon – as other countries are moving forward quickly to seize the 5G mantle.

The C-Band Alliance proposes a total of 180 MHz of spectrum to be shared among operators in the 3.7-3.9 GHz range while the 6 GHz NPRM contemplates 1200 MHz for unlicensed use in the mid-band. As noted in the presentation and in our Comments<sup>1</sup> in this proceeding, to help address the critical need for more mid-band spectrum, we propose that the Commission repurpose the 6.425-7.125 GHz band for flexible use licensed service.

We also ask the Commission and NTIA to study sharing the 7.125-8.5 GHz band for fixed commercial uses to allow additional backhaul for high-bandwidth 5G services. Additionally, this band would be ideal to relocate some of the incumbent users of the 6.525-7.125 GHz band.<sup>2</sup>

Respectfully submitted,

/s/ Jared M. Carlson

Jared M. Carlson  
Vice President,  
Government Affairs and Public Policy  
Ericsson

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<sup>1</sup> See Comments of Ericsson, *Unlicensed Use of the 6 GHz Band*, ET Docket No. 18-295, at 13 (Feb. 15, 2019).

<sup>2</sup> See *id.* at 13-16.



# Balanced Approach to 6 GHz

Ericsson

April 22, 2019

# Mid-band Spectrum Pipeline Needed

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Presently, there is *no* large swath of mid-band spectrum available for licensed macro 5G service in the U.S.

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The 3.7-4.2 GHz band is the only pending opportunity, and only part of that spectrum may be available for repurposing

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Limited opportunity for macro 5G in CBRS band: limited capacity from smaller channel sizes and low transmit power

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Propose rulemaking to consider repurposing the 6.425-7.125 GHz band for licensed flexible-use service and auctioning the band

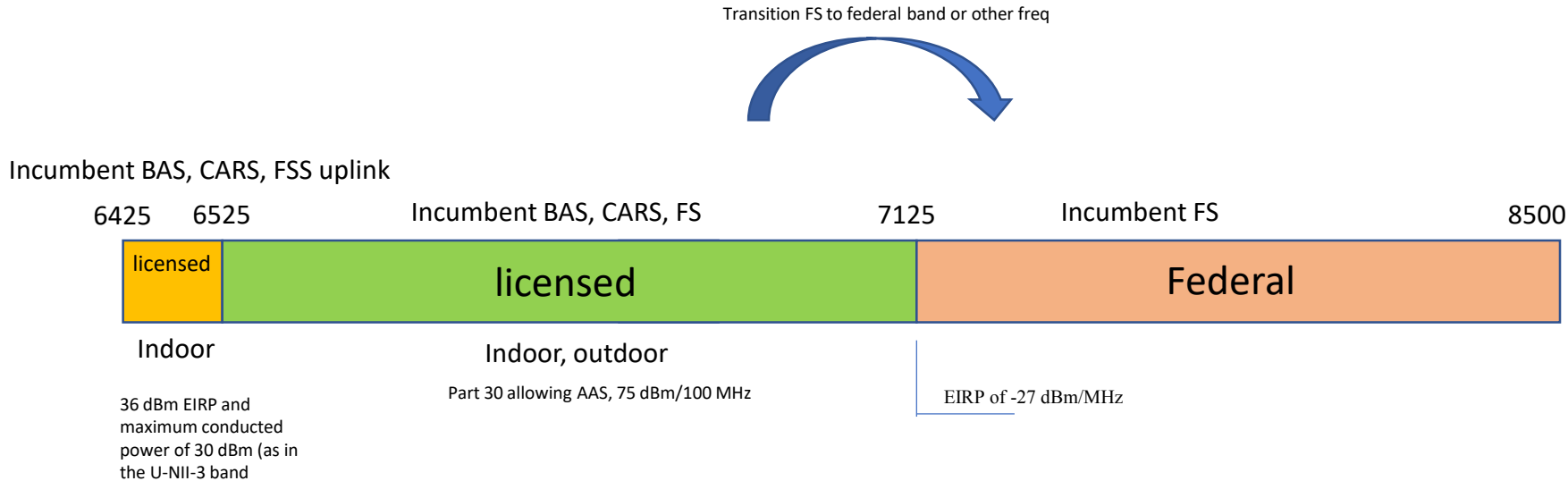
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# Segmentation of 6 GHz band



- Current imbalance in mid-band spectrum expected
  - FCC NPRM proposal 5925-7125 MHz (1200 MHz unlicensed) vs. inevitable C-band partition between mobile services and satellite
  - C-band Alliance proposes 3700-3900 MHz (180 MHz) licensed
    - Very limited opportunity for licensed spectrum between 7-24 GHz
    - No long term pipeline for mid-band spectrum
- Proposal for 6 GHz to be divided into licensed and unlicensed segments
  - IoT expected to also be a 5G use case: reliability, latency, QoS, security, interference protection
  - Rural broadband deployment opportunity in conjunction with low band spectrum, e.g. 600 MHz
  - FCC has already issued substantial unlicensed spectrum

# Licensed Segment in 6 GHz

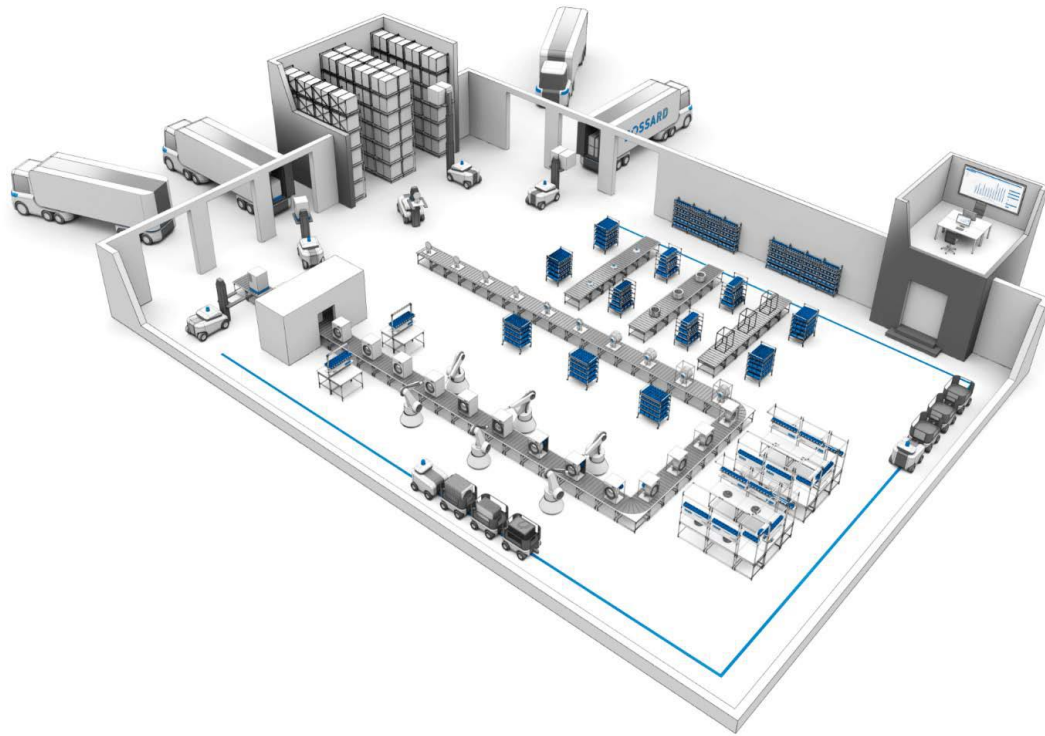


- The consideration to allow licensed in the U6 should not impact the timeline of unlicensed in the L6
- Propose Licensed: 6.425-7.125 GHz
  - Industry support
  - Being considered in the ECC and in the 3GPP
  - Possible WRC agenda item for IMT. U.S. leadership needed

# Macro 5G in mid-band

- 6425-7125 MHz
  - Coverage layer that augments the capabilities of UMFUS
  - Utilize the FCC's *Emerging Technologies* approach to require winning bidders to relocate incumbents to comparable facilities (i.e., new spectrum bands, other carriage medium)
  - Propose transition of urban and suburban FS links to comparable facilities including other FS bands and fiber
    - Examine transitioning the 7.125-8.5 GHz band from an exclusive federal band to a shared one, allowing relocation of non-federal FS incumbents to adjacent frequencies with similar propagation characteristics
    - Maintain protection for remaining FS, e.g. rural links, by utilizing an off-line database either on a permanent or temporary basis





# Cellular IoT

- 6425-6525 MHz
  - Used extensively by broadcast stations, programming networks, and video production companies for electronic news gathering and wireless video links
  - Unlicensed spectrum may not provide interference protection or a guaranteed quality of service demanded by Industrial IoT use cases
  - Enable Industrial IoT use cases using licensed spectrum
  - Power limitation, combined with indoor-only, licensed use, can protect incumbents
  - Recommends a regulatory framework to make it possible for utilities and enterprises to invest in high performance systems



Image courtesy Wikipedia

# Mobile broadcast

## 6875-7125 MHz

- mmW 5G cellular technology used to demonstrate streaming 4K video for nationwide broadcasts
- Social media outpaces print newspapers in the U.S. as a news source.
- Examination of whether BAS and CARS services are using this spectrum as efficiently as possible.
- In some circumstances it may be most efficient to move BAS and/or CARS facilities to different bands or to transmission mediums, *e.g.*, fiber or 5G.

# Fixed Service in 7/8 GHz

## Additional 5G Backhaul

Spectrum needed for long-haul backhaul support for gigabit services

## Constraints in 6 GHz to support Backhaul

L6 GHz spectrum congested and U6 GHz is limited to 30 MHz channels

## Study and NTIA collaboration

Study if the federal band 7.125-8.5 GHz can support non-federal fixed services

## International Interest for IMT

GSMA has an information document promoting 7125-8500 MHz among other bands for IMT

## Global Fixed/Mobile Allocation in 7/8 GHz

Microwave backhaul in use in a number of markets; Allow 60 MHz channels  
Allow Cat B1 and B2 antenna sizes when less frequency congestion.  
Does U6 overlay NTIA bandplan to allow easier migration to 7/8 GHz?



<https://www.Ericsson.com>